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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,906	10/30/2003	Akihiko Takeda	Q78005	5662

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EXAMINER	
HON, SOW FUN	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,906	TAKEDA ET AL.	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 29 April 2005.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Rejections Withdrawn

1. The objection and 35 U.S.C. 102(b) and 103(a) rejections have been withdrawn due to the amendment dated 04/29/05.

New Rejections

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In order to positively recite the different layers and to clarify that the resin composition for the spacer is in the photoconductive resin layer, it is suggested that Applicant rewrite the claim as follows: "A resin composition for spacer according to Claim 15, present in a photoconductive resin layer of a structure comprising: a temporary support; an alkali-soluble thermoplastic resin layer; an interlayer; and the photoconductive resin layer arranged in this order."

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5, 18-19, 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Totsuka et al. (US 5,563,020).

Regarding claims 1-5, Totsuka teaches a resin composition comprising: at least one resin (polymeric organic binder, column 7, line 48), selected from a resin containing an allyl methacrylate as an ally group containing monomer unit and methacrylic acid (column 8, lines 45-55) which contains a hydroxyl group; a polymerizable monomer; and a polymerization initiator (column 7, lines 43-49) wherein the resin composition is a photo-polymerizable resin composition (column 7, lines 43-49).

The recitation "for spacer" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). See MPEP 2111.02. In the instant case, only the resin composition is positively recited.

Totsuka teaches that the photo-polymerizable resin composition can comprise a mixture of two or more resins (polymeric organic binders, column 8, lines 65-67), wherein the at least one resin is a resin mixture containing an allyl-containing resin and

a hydroxyl-containing resin (copolymer of methacrylic acid, column 8, lines 50-60) which comprises benzyl methacrylate, a methacrylate containing no allyl group.

Regarding claims 18-19, the recitation "for use in ..." has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). See MPEP 2111.02. In the instant case, only the resin composition is positively recited.

Regarding claim 23, Totsuka teaches that the resin composition further comprises a coloring agent (substance, column 11, lines 50-55).

6. Claims 1-15, 18-19, 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Furukawa (US 6,569,603).

Regarding claims 1-5, Furukawa teaches a resin composition comprising at least one resin (polymer (A'), abstract); a polymerizable monomer ((D), abstract); and a polymerization initiator ((B), abstract), wherein the resin composition is a photo-polymerizable resin composition (abstract). Furukawa teaches that the at least one resin comprises allyl methacrylate which is an allyl-containing methacrylate monomer unit, methacrylic acid which is hydroxyl-containing, and benzyl methacrylate, which is a methacrylate containing no allyl group (column 39, lines 37-40 and column 41, lines 55-60).

The recitation "for spacer" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). See MPEP 2111.02. In the instant case, only the resin composition is positively recited.

Regarding claims 5, 7-10, Furukawa teaches that in addition to the methacrylic acid monomer unit (column 7, lines 60-65) which is hydroxyl-containing, the at least one resin can comprise a hydroxyalkyl methacrylate (methacrylic ester having a hydroxyalkyl group such as 2-hydroxyethyl methacrylate and 2-hydroxypropyl methacrylate, column 8, lines 13-15), which is also a hydroxyl-containing monomer unit, and benzyl methacrylate (column 8, lines 10-15), a methacrylate containing no hydroxyl group.

Regarding claim 6, Furukawa teaches that the content of the allyl-containing monomer in the at least one resin has a 60/(60+20+20) molar ratio which is 60 % by mole (column 39, lines 35-40 and column 41, lines 55-60), well within the claimed range of 10% by mole or more.

Regarding claim 11, Furukawa teaches that the content of the hydroxyl-containing monomer (methacrylic acid, column 41, lines 55-56) has a 20/(60+20+20) molar ratio, which is 20% by mole (column 41, line 57), well within the claimed range of 10% by mole or more.

Regarding claim 12, Furukawa teaches that the content of the resin containing an allyl group (1) (binder resin) is 65% by mass (10x100/(10+1+4+0.4)) after evaporation of the dioxane and cyclohexane solvents (column 40, lines 55-61) within the claimed range of from 15 % by mass to 70% by mass of the total solid contents of the resin composition.

Regarding claim 13, Furukawa teaches that the content of the resin containing an allyl group and hydroxyl group (2) (binder resin) is 65% by mass (10x100/(10+1+4+0.4)) after evaporation of the dioxane and cyclohexane solvents (column 40, lines 55-61), within the claimed range of from 15 % by mass to 80% by mass of the total solid contents of the resin composition.

Regarding claim 14, Furukawa teaches that the content of the resin mixture of an allyl-containing resin and a hydroxyl-containing resin (3) (binder resin) is 65% by mass (10x100/(10+1+4+0.4)) after evaporation of the dioxane and cyclohexane solvents (column 40, lines 55-61), within the claimed range of from 15 % by mass to 70% by mass of the total solid contents of the resin composition.

Regarding claim 15, Furukawa teaches that the resin composition further comprises an extender (particles, column 35, line 55) as defined by Applicant's specification (original claim 17).

Regarding claims 18-19, the recitation "for use in ..." has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the intended use of a structure, and where the body of the claim does not depend on the preamble for

completeness but, instead, the structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). See MPEP 2111.02. In the instant case, only the resin composition is positively recited.

Regarding claim 23, Furukawa teaches that the resin composition further comprises a coloring agent (dyes or pigments, column 35, lines 52-54).

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Totsuka as applied to claims 1-5, 18-19, 23 above, and further in view of Hashimoto et al. (US 5,955,198).

Totsuka teaches a resin composition comprising at least one resin selected from (1) a resin containing at least an allyl group, (2) a resin containing at least an allyl group and a hydroxyl group and (3) a resin mixture containing an allyl-containing resin and a hydroxyl-containing resin; a polymerizable monomer; and a polymerization initiator, as described above. Totsuka fails to teach that the resin composition further comprises an extender, let alone the average particle size of 0.01 to 0.5 μm and the amount of the extender of from 5 % to 50 % by mass of the total solid contents of the resin composition.

Hashimoto teaches that the mechanical strength and hardness of a composition is adjusted by the addition of an extender (filler, column 4, lines 35-40) such as silica (column 4, lines 50-55), a commercially available example being aerosil 200 (column 6, lines 20-21) taught by Applicant's specification (#200 aerosil, page 16, 3rd paragraph), which means that the average particle diameter of 0.01 to 0.5 μm is overlapped. Adjustment by addition of the extender (filler) means varying the amount of the extender (filler).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have added an extender to the resin composition of Totsuka to provide mechanical strength and hardness, as taught by Hashimoto, and to have varied the amount of the extender to obtain the claimed amount of from 5 % to 50 % by mass of the total solid contents of the resin composition, in order to provide the desired mechanical strength and hardness for the end-use of the finished product.

9. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa as applied to claims 1-15, 18-19, 23 above, and further in view of Hashimoto et al. (US 5,955,198).

Furukawa teaches a resin composition comprising at least one resin selected from (1) a resin containing at least an allyl group, (2) a resin containing at least an allyl group and a hydroxyl group and (3) a resin mixture containing an allyl-containing resin and a hydroxyl-containing resin; a polymerizable monomer; and a polymerization initiator, as described above. In addition, Furukawa teaches that the resin composition further comprises an extender (particles, column 35, line 55) as defined by Applicant's

specification (original claim 17). Furukawa fails to teach the average particle diameter and amount of the extender.

Hashimoto teaches that the mechanical strength and hardness of a composition is adjusted by the addition of an extender (filler, column 4, lines 35-40) such as silica (column 4, lines 50-55), a commercially available example being aerosil 200 (column 6, lines 20-21) taught by Applicant's specification (#200 aerosil, page 16, 3rd paragraph), which means that the average particle diameter of 0.01 to 0.5 μm is overlapped. Adjustment by addition of the extender (filler) means varying the amount of the extender (filler).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have added an extender to the resin composition of Furukawa to provide mechanical strength and hardness, as taught by Hashimoto, and to have varied the amount of the extender to obtain the claimed amount of from 5 % to 50 % by mass of the total solid contents of the resin composition, in order to provide the desired mechanical strength and hardness for the end-use of the finished product.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,593, 802) in view of Furukawa (US 6,569,603).

Regarding claim 20, Sato teaches a spacer formed by a resin composition for spacer (column 6, lines 9-19), the resin composition for spacer comprising a resin comprising a methacrylic acid monomer unit and a benzyl methacrylate monomer unit (copolymer, column 6, line 15-18); a polymerizable monomer (pentaerythritol tetraacrylate, column 6, lines 18-19); and a polymerization initiator (Michler's ketone,

column 6, lines 19-20); wherein the resin composition for spacer is a photo-polymerizable resin composition (column 4, lines 39-53).

Sato fails to teach that the resin comprising a methacrylic acid monomer unit and a benzyl methacrylate monomer unit (copolymer, column 6, line 15-18) also contains a monomer unit which contains at least an allyl group.

Furukawa teaches a resin composition comprising at least one resin (polymer (A'), abstract); a polymerizable monomer ((D), abstract); and a polymerization initiator ((B), abstract), wherein the resin composition is a photo-polymerizable resin composition (abstract). Furukawa teaches that the at least one resin comprises an allyl methacrylate which is an allyl-containing methacrylate monomer unit, methacrylic acid which is hydroxyl-containing, and benzyl methacrylate, which is a methacrylate containing no allyl group (column 39, lines 37-40 and column 41, lines 55-60). Furukawa teaches that the resin composition has excellent light sensitivity, forming sharp relief images (column 42, lines 5-12).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the resin composition of Furukawa, which also contains an allyl group containing monomer unit, in place of the resin composition of Sato, to provide a photopolymerizable resin composition with excellent light sensitivity, in order to form a spacer with the desired sharpness of relief image.

11. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Furukawa as applied to claim 21 above, and further in view of Jones (US 5,529,524).

Sato in view of Furukawa teaches a spacer formed by a resin composition for spacer, the resin composition for spacer comprising: at least one resin selected from (1) a resin containing at least an allyl group, (2) a resin containing at least an allyl group and a hydroxyl group and (3) a resin mixture containing an allyl-containing resin and a hydroxyl-containing resin; a polymerizable monomer; and a polymerization initiator, as described above.

In addition, Sato teaches a liquid crystal display device comprising: a pair of substrates facing each other (oppositely disposing a lower substrate and an upper substrate, column 1, lines 12-17); a spacer disposed between the pair of substrates for maintaining a cell gap between the pair of substrates constant (to define the thickness of the liquid crystal layer, column 1, lines 18-23); and a liquid crystal sealed into a space defined by the pair of substrates and the spacer (column 1, lines 15-19).

Sato in view of Furukawa fails to teach that the spacer is pixel-patterned.

Jones teaches that a pixel-patterned spacer (part of the pixel-pattern) is unobtrusive to the viewer of the display (column 15, lines 25-30).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have formed the spacers of Sato in view of Furukawa, into the pixel-patterned spacers taught by Jones, in order to obtain a liquid crystal display where the spacers are unobtrusive to the viewer of the display, as taught by Jones.

Although Sato in view of Furukawa and Jones fails to teach that the spacer has a plastic deformation of 0.3 μm or less, as determined in a compression test at a load speed of 0.145 gf/sec, a load of 2 gf, a retention time of 5 sec, and a measurement

temperature of 160 °C using a cylindrical penetrator having a diameter of 50 μm, a chemical composition and its properties are inseparable. If the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01. Therefore the pixel-patterned spacer of Sato in view of Furukawa and Jones, which has the identical chemical composition as presently claimed, is expected to have a plastic deformation of 0.3 μm or less, as determined in a compression test at a load speed of 0.145 gf/sec, a load of 2 gf, a retention time of 5 sec, and a measurement temperature of 160 °C using a cylindrical penetrator having a diameter of 50 μm.

Response to Arguments

12. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon
07/21/05

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

7/21/05